

# Source Water Assessment Report



**Public Water Supply: MELVERN, CITY OF**

**Assessment Areas Include:  
759, 760**



Kansas Department of Health and Environment  
Bureau of Water Watershed Management Section  
1000 SW Jackson St., Suite 420  
Topeka, KS 66612-1367



Burns & McDonnell  
9400 Ward Parkway  
Kansas City, MO 64114



Kansas Geological Survey University of Kansas  
1930 Constant Ave.  
Lawrence, KS 66047

Reports were generated with the Automated Source Water Assessment Tool (ASWAT). Assessments were completed online using ASWAT by hundreds of state employees, public water supply staff, and technical assistant providers throughout the State of Kansas.

# Table Of Contents

## [Report Description](#)

<a href="#"><u>Assessment Area 759</u></a>	<a href="#"><u>1.0</u></a>
<a href="#"><u>Executive Summary</u></a>	<a href="#"><u>1.1</u></a>
<a href="#"><u>Potential Sources</u></a>	<a href="#"><u>1.2</u></a>
<a href="#"><u>Added Sources</u></a>	<a href="#"><u>1.3</u></a>
<a href="#"><u>Potential Contaminants Summary</u></a>	<a href="#"><u>1.4</u></a>
<a href="#"><u>Potential Contaminants Listing</u></a>	<a href="#"><u>1.5</u></a>
<a href="#"><u>Protection Measures</u></a>	<a href="#"><u>1.6</u></a>
<a href="#"><u>Assessment Analysis</u></a>	<a href="#"><u>1.7</u></a>
<a href="#"><u>Site Comments</u></a>	<a href="#"><u>1.8</u></a>
<a href="#"><u>Added Site Comments</u></a>	<a href="#"><u>1.9</u></a>
<a href="#"><u>Analysis Question Comments</u></a>	<a href="#"><u>1.10</u></a>
<a href="#"><u>Assessment Area 760</u></a>	<a href="#"><u>2.0</u></a>
<a href="#"><u>Executive Summary</u></a>	<a href="#"><u>2.1</u></a>
<a href="#"><u>Potential Sources</u></a>	<a href="#"><u>2.2</u></a>
<a href="#"><u>Added Sources</u></a>	<a href="#"><u>2.3</u></a>
<a href="#"><u>Potential Contaminants Summary</u></a>	<a href="#"><u>2.4</u></a>
<a href="#"><u>Potential Contaminants Listing</u></a>	<a href="#"><u>2.5</u></a>
<a href="#"><u>Protection Measures</u></a>	<a href="#"><u>2.6</u></a>
<a href="#"><u>Assessment Analysis</u></a>	<a href="#"><u>2.7</u></a>
<a href="#"><u>Site Comments</u></a>	<a href="#"><u>2.8</u></a>
<a href="#"><u>Added Site Comments</u></a>	<a href="#"><u>2.9</u></a>
<a href="#"><u>Analysis Question Comments</u></a>	<a href="#"><u>2.10</u></a>

# Report Description

## Detailed Explanation of Entire Report:

The 1996 amendments to the Safe Drinking Water Act require each state to develop a Source Water Assessment Program (SWAP) and a Source Water Assessment (SWA) for each Public Water Supply (PWS) that treats and distributes raw source water. In Kansas there are 761 public water supplies that require SWAs. A SWA includes a delineation of the source water assessment area, an inventory of potential contaminant sources, and a susceptibility analysis.

A PWS can consist of one or more individual assessment areas that require different assessments. In general, an assessment area is delineated at a two-mile fixed radius for a groundwater well. A surface water intake assessment area is the upstream-drainage area (watershed), inside the state border. Additionally, an assessment area can consist of an individual well, group of wells, an individual surface water intake, or multiple surface water intakes.

After each assessment is completed a report is automatically generated using an Internet-based application called the Automated Source Water Assessment Tool (ASWAT). The individual assessment reports combine to form the entire SWA report for a PWS.

A map of each Assessment Area was also generated with ASWAT. However, for security reasons the maps are not included in this report. To obtain a copy of the map(s), please contact your local PWS.

All PWS reports will be available for viewing and downloading on KDHE's Watershed Management Section website(<http://www.kdhe.state.ks.us/nps>) in 2004.

## MELVERN, CITY OF Summary:

AA	Type	Diversion Id
759	Ground water single well	002
760	Surface water single intake	999

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## **Executive Summary:**

The Executive Summary gives the assessment area's Susceptibility Likelihood Score (SLS) for each contaminant of concern category.

SLS indicates which contaminant category is most likely to impact a given public water supply. Contaminants of concern for groundwater include microbiological, inorganic compounds, nitrates, synthetic organic compounds, pesticides, and volatile organic compounds. Contaminants of concern for surface water include microbiological, inorganic compounds, eutrophication – phosphorus, sedimentation, synthetic organic compounds, pesticides, and volatile organic compounds.

To determine the assessment area's susceptibility to contamination, a qualitative (semi-quantitative) screening level susceptibility analysis was designed that utilizes general assumptions and best professional judgement. It is a systematic procedure comprised of simple yes/no questions. Each question in the susceptibility analysis focuses on the presence or absence of potential pollution sources in the assessment area. SLS is most useful in helping the Public Water Supply (PWS) focus on water quality protection actions towards a contaminant category of concern. For example, if the SLS for microbiological contamination is high, relative to volatile organic compounds (VOC), water supply protection planners would conclude that the attention should be directed towards microbiological contaminant sources rather than VOC sources.

# Executive Summary

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 759

## Susceptibility Likelihood Scores for Assessment Area

Contaminant Category	A	B	B*	C	C*	D
Susceptibility Likelihood Score – SLS	44	49	45	56	45	59
SLS Range	Low	Low	Low	Mid	Low	Mid

A – Microbiological

B\* – Nitrates

C\* – Pesticides

B – Inorganic Compounds

C – Synthetic Organic Compounds

D – Volatile Organic Compounds

## Susceptibility Likelihood Range

SLS Range	
0–50	Low Susceptibility
51–80	Moderate Susceptibility
81–100	High Susceptibility

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## Potential Sources:

The Potential Sources section lists all the sites that have been identified as potential sources of contamination.

Potential sources of contamination may include land uses, industry, or businesses that could generate or store chemicals/substances that could potentially contaminate the water supply only if released into the environment. Both unregulated sites from business location databases and regulated sites from various KDHE databases were compiled. Additional sites could have been added by an evaluator through the assessment process to supplement the original data.

The 1987 Standard Industrial Classifications (SIC) were used to identify potential contaminate sites. The SIC system classifies establishments into industries on the basis of the primary activities of the establishment.

Each assessment area is delineated with 3 assessment zones. These zones can be used to get a general understanding of the potential influence sites have based on proximity to the water supply. Zone A is a 100-foot radius around a groundwater well and a 1000-foot radius around a surface water intake. Zone B is a 2000-foot radius around wells and a hydrological delineated buffer around the surface water sources. Zone C is a 2-mile radius around wells and the balance of the watershed for intakes. The potential sources listed in this section are sorted to show all the potential sources in Zone A first, Zone B second, and Zone C third.

**Although a facility or business is identified in the study as a potential concern, it does not necessarily mean a release or spill has occurred. Contamination could only occur if certain chemical substances are released into the environment and filter into the water supply source.**

The data for the potential sources of contamination was compiled from May through August in 2002. Some of the databases used were incomplete datasets that are continually being updated. Due to the incompleteness, inaccuracies, and new development, it is possible that sources of potential contamination that are in the assessment area are not included in the report. Inaccurate locations could also cause sources to show up in the assessment area that are not actually in the assessment. Additionally, duplication between the datasets could cause sites to show up multiple times in the assessment area.

# Potential Sources

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**

## Unregulated Potential Site Sources

Source No.	SIC Description	SIC ID	Zone
141619	Gasoline Service Station	5541	B
141636	Single-family Housing Construction	1521	C
141615	Signs and Advertising Display Manufacturing	3993	C
141616	Signs and Advertising Display Manufacturing	3993	C
141617	Farm Product Warehousing and Storage	4221	C

## Regulated Confined Animal Feeding Operations Potential Site Sources

Source No.	Source Name	ID/Permit No.	Zone
2000882	Litch Farms	A-MCOS-BA06	C

## Regulated Hazardous Waste Potential Site Sources

Did Not Contain Any Of These Potential Site Sources
---

## Regulated Leaking Storage Tank Potential Site Sources

Did Not Contain Any Of These Potential Site Sources

## Regulated Identified Contaminated Potential Site Sources

Did Not Contain Any Of These Potential Site Sources

## Regulated Solid Waste Potential Site Sources

Did Not Contain Any Of These Potential Site Sources

## Regulated Waste Water Potential Site Sources

Source No.	Source Name	ID/Permit No.	Zone
6001481	MELVERN MWTP	M-MC23-OO01	B
6000768	MARTIN MARIETTA (MELVERN QUARRY)	I-MC23-PO02	C



Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## **Added Sources:**

The Added Sources section lists all the sites that have been added as potential sources of contamination by an evaluator through the assessment process to supplement the original data.

The potential sources listed in this section are sorted to show the added potential sources in Zone A first, Zone B second, and Zone C third.

**Although a facility or business was added as a potential concern, it does not necessarily mean a release or spill has occurred. Contamination could only occur if certain chemical substances are released into the environment and filter into the water supply source.**

# Added Sources

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**

## Added Potential Site Sources

Source No.	Source Name	SIC ID	Zone
Did Not Add Any Site Sources			

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## **Potential Contaminants Summary:**

The Contaminants Summary shows the number of identified unregulated sources in the assessment area for each contaminant of concern category.

In order to obtain the number of sources for each category, a relationship was correlated between each Standard Industrial Classification (SIC) and the contaminant of concern categories. Each SIC was assessed and associated with contaminant categories. For example, if not managed properly, a car wash (SIC 7542) could potentially contaminate an intake because of inorganic compounds (IOC) and volatile organic compounds (VOC); thus, a car wash is associated with IOCs and VOCs.

A chart displays a count for each contaminant category. The sum for each category represents the total number of identified sources that have been associated with that particular contaminant category. However, the total number of identified sources does not include contaminants from the Added Sources. In our example, a car wash would be considered 2 sources of contamination. It would be a potential source of contamination for IOCs and for VOCs; thus, 1 would be added to the total number of sources in the VOC category and 1 would be added to the IOC category.

# Potential Contaminants Summary

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 759

## Number of Unregulated Site Sources Identified for each Contaminant Category

MicroBiological	Pesticides	IOC's	SOC's	VOC's	Nitrates
1	0	4	1	4	1

A – Microbiological

B\* – Nitrates

C\* – Pesticides

B – Inorganic Compounds

C – Synthetic Organic Compounds

D – Volatile Organic Compounds

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## Potential Contaminants Listing:

The Potential Contaminants section lists the contaminant of concern category associated with each Standard Industrial Classification (SIC) found in an assessment area. A complete list of contaminant category codes are located at the bottom of this page.

The relationships defined between the Standard Industrial Classifications (SIC) and the contaminant of concern categories are displayed in a table format. Using our car wash example, the relationships can be better illustrated. A car wash could release IOC and VOC chemical substances. The connection is shown by indicating the SIC, 7542, and the associated contaminant categories, IOC (Category B) and VOC (Category D). However, the contaminants listed are not associated with any Added Sources.

The list is sorted by the SIC source description and it only shows unique SIC sources. For example, an assessment area can have 20 car washes in an assessment area, but the list is only going to show contaminant categories associated with car washes onetime. This is because all car washes have the same SIC and every car wash poses the same potential threat to water intakes.

**A** – Microbiological    **B** – Inorganic Compounds                      **B1** – Eutrophication – Phosphorous  
**B2** – Sedimentation    **B\*** – Nitrates    **C** – Synthetic Organic Compounds  
**C\*** – Pesticides            **D** – Volatile Organic Compounds

# Potential Contaminants Listing

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 759

## Unregulated Identified Site Sources and associated Potential Contaminant Category

SIC ID	SIC Source	Potential Contaminant	Contaminant Category
5541	Gasoline Service Station	Inorganics, VOCs	B
"	"	"	D
3993	Signs and Advertising Display Manufacturing	inorganics, VOCs	B
"	"	"	D
1521	Single-family Housing Construction	Oil, Paint, Pesticides, Fertilizers	A
"	"	"	B1
"	"	"	B2
"	"	"	B*
"	"	"	C
4221	Farm Product Warehousing and Storage	TSS, VOCs	B
"	"	"	D

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## **Protection Measures:**

The Protection Measures section shows water quality protection measures for the Standard Industrial Classifications (SIC) identified in the assessment area.

Previous sections of this report are designed to show areas that Public Water Supplies (PWS) can focus on to improve the susceptibility of an assessment area. This section helps identify water quality protection measures that a PWS can use as guidance for implementing action for a potential contaminant site in the assessment area. It focuses on protection measures that can reduce the risk of contamination to the water supply.

This portion of the report only displays water quality protection measures for each type of SIC found in the assessment area. It does not display protection measures for each site in the assessment area because every SIC should have the same or similar water quality protection management practices. However, the protection measures listed are not associated with any Added Sources.

# Protection Measures

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**

## Recommended Water Quality Protection Measures

SIC	SIC Source	Contaminant Source	Water Quality Protection Measure	Regulatory Authority
5541	Gasoline Service Station	Inorganics, VOCs	Maintain area to minimize fuel contamination	NA
3993	Signs and Advertising Display Manufacturing	inorganics, VOCs	Manage wastes properly and treat process wastewater prior to discharge to a POTW or direct	40 CFR 459 and State or federal Storm water pollution prevention regulations
1521	Single-family Housing Construction	Oil, Paint, Pesticides, Fertilizers	Proper cleaning and disposal of household hazardous waste. Proper storage, application, and clean up of pesticides and fertilizers	KAR 28-48, KDHE, KDEM
4221	Farm Product Warehousing and Storage	TSS, VOCs	Keep the area clean of grain. Use grease traps.	State or federal Storm water pollution prevention regulations



Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## **Assessment Analysis:**

The Assessment Analysis section displays the numbers assigned to each contaminant of concern category for each question in the susceptibility analysis.

This analysis is based on a decision tree framework consisting of a series of yes/no questions. These questions consider the proximity of contaminant sources to the water supply intake, the type of contaminant, and the application of pollution prevention or water quality protection practices to sources of contamination. As the evaluator moves through the analytical framework, susceptibility points are accumulated based on the presence of contaminant sources in the assessment area.

After all the questions have been answered, the SLS is calculated for each contaminant of concern category. The SLS is determined by counting the number of contamination risk factors found to occur in the delineated assessment area and applying a multiplier to this number. Because the number of contaminant category risk factors is not equal, the multiplier is used to establish a common scale for the SLS of each contaminant category.

# Assessment Analysis

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**

## Ground Water Single Well Analysis

**A** – Microbiological   **B** – Inorganic Compounds  
**B\*** – Nitrates   **C** – Synthetic Organic Compounds  
**C\*** – Pesticides   **D** – Volatile Organic Compounds

No.	Question	Response	A	B	B*	C	C*	D
1	Is the well under the influence of surface water?	Yes	1	1	1	1	1	1
2	Does the well meet KS water well construction standards?	Yes	0	0	0	0	0	0
3	Is the depth of the well less than 30 feet?	No	0	0	0	0	0	0
4	Are there unplugged, abandoned water wells present in Zone A?	Yes	1	1	1	1	1	1
5	Is there gravel pack within 20 feet of the surface?	No	0	0	0	0	0	0
6	Does a PWS own or control Zone A?	No	1	1	1	1	1	1
7	Does Zone A consist entirely of native grass?	No	1	1	1	1	1	1
8	Is there a contaminated well in the Zone A?	No	0	0	0	0	0	0
9	Is a class V UIC well present?	No	0	0	0	0	0	0
10	Are any commercial, industrial, or urban areas present in Zone B?	Yes	1	1	1	1	1	1
11	Does each industrial/commercial site and urban area have a water quality protection plan in place?	No	1	1	1	1	1	1
12	Are any non-farm home sites present in Zone B?	No	0	0	0	0	0	0
13	Do all the non-farm home sites have a water quality protection plan?	Yes	0	0	0	0	0	0
14	Are any farmsteads present in Zone B?	Yes	1	1	1	1	1	1
15	Do all farmsteads have a water quality protection plan?	No	1	1	1	1	1	1
16	Does Zone B consist entirely of native grass?	No	1	1	1	1	1	1
17	Is there grazing livestock in Zone B?	Yes	1	0	1	0	0	0

No.	Question	Response	A	B	B*	C	C*	D
18	Do all the livestock producers have water quality protection measures in place?	No	1	0	1	0	0	0
19	Is there livestock confinement in Zone B?	No	0	0	0	0	0	0
20	Is each confined animal feeding operation registered with KDHE?	Yes	0	0	0	0	0	0
21	Is there corn or grain sorghum production in Zone B?	No	0	0	0	0	0	0
22	Are corn/grain sorghum nutrient and pesticide management plans in use for each site?	Yes	0	0	0	0	0	0
23	Are any orchards present in Zone B?	No	0	0	0	0	0	0
24	Are orchard nutrient and pesticide plans in use for each site?	Yes	0	0	0	0	0	0
25	Are there unsewered developments (concentrations of lagoons or septic systems) present in Zone B?	No	0	0	0	0	0	0
26	Is there a railroad or major highway in Zone B or C?	Yes	0	1	1	1	1	1
27	Is there oil production in Zone B or C?	No	0	0	0	0	0	0
28	Do coarse textured soils predominate Zones A, B and C?	No	0	0	0	0	0	0
29	Is an irrigation well located in Zone B or C?	Yes	0	1	1	1	1	1
30	Is a wastewater treatment facility in Zone B or C?	Yes	1	1	1	1	1	1
31	Is a solid waste landfill in Zone B or C?	No	0	0	0	0	0	0
32	Are there unplugged, abandoned water wells present in Zone B or C?	No	0	0	0	0	0	0
33	Are any commercial, industrial, or urban areas present in Zone C?	Yes	1	1	1	1	1	1
34	Are water quality protection plans in use for each site/area?	No	1	1	1	1	1	1
35	Is there livestock confinement in Zone C?	No	0	0	0	0	0	0
36	Is each confined livestock facility registered with KDHE?	Yes	0	0	0	0	0	0
37	Do all the livestock producers have water quality protection measures in place?	Yes	0	0	0	0	0	0
38	Are cropland nutrient management plans in place?	No	0	0	1	0	0	0
39	Are cropland pesticide management plans in place?	No	0	0	0	0	1	0
40	Does a perennial stream flow into Zone C?	No	0	0	0	0	0	0
41	Are watershed water quality protection plans in place?	Yes	0	0	0	0	0	0

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## **Site Comments:**

The Site Comments section lists all the comments that were added for the potential sources of contamination found in the assessment area.

Local comments and feedback from people that are familiar with the assessment area is an important aspect of the assessment. The comments greatly improve the assessment by adding detail to the sites that can be referenced for more information.

This local information may include comments on potential contamination threats (or lack there of), local water quality protection initiatives, etc. Adding comments are optional and are mainly focused on sources in areas that could have the greatest impact on water supply if a spill or release occurred in the environment. It is left to the discretion of the PWS and/or source water assessment committee to add comments.

# Site Comments

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**

## Comments for Unregulated Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Confined Animal Feeding Operations Sites

Potential Contaminant Site Name	Site No.	Site Comments	Author
Litch Farms	2000882	livestock operation water quality plan unknown	Sheila Dale

## Comments for Regulated Hazardous Waste Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Leaking Storage Tank Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Identified Contaminated Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Solid Waste Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Waste Water Sites

Potential Contaminant Site Name	Site No.	Site Comments	Author
MARTIN MARIETTA (MELVERN QUARRY)	6000768	This quarry has been closed and reclaimed	Sheila Dale
MELVERN MWTP	6001481	City of Mever is in the process of updating the lagoon system they have applied for a permit through the KS water pollution control permit and suthoriztion to discharge under the national pollutant discharge elimination system. T	Sheila Dale
MELVERN MWTP	6001481	They have a 2 cell lagoon system, and are requesting to add an additional cell	Sheila Dale
MELVERN MWTP	6001481	Monitorin for ammonia and fecal coliform shall be conducted annuall during July, Aug, or Sept. and reported to KDHE with the discharge moitoring report	Sheila Dale

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

### **Added Site Comments:**

The Added Site Comments section lists the comments for why sites were added as a potential source of contamination found to the assessment area.

# Added Site Comments

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**

## Comments for Added Contaminant Sites

Added Contaminant Site Name	Site No.	Site Comments	Author
Did Not Receive Any Comments			



Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **759**  
Diversion Id's: **002**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:46:17**

## **Analysis Question Comments:**

The Analysis Question Comments section lists all the comments that were added during analysis portion of the assessment, in which a series of yes/no questions were asked.

Evaluators have the option to add comments to questions to clarify why a response was given or to give more details to a question. Local comments and feedback from people that are familiar with the assessment area is an important aspect of the assessment. The comments greatly improve the assessment by adding clarification and details that could not be identified with a simple yes or no response.

# Analysis Question Comments

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 759

## Comments for Analysis Questions

Analysis Question	Question Comments	Author
Did Not Receive Any Comments		

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## **Executive Summary:**

The Executive Summary gives the assessment area's Susceptibility Likelihood Score (SLS) for each contaminant of concern category.

SLS indicates which contaminant category is most likely to impact a given public water supply. Contaminants of concern for groundwater include microbiological, inorganic compounds, nitrates, synthetic organic compounds, pesticides, and volatile organic compounds. Contaminants of concern for surface water include microbiological, inorganic compounds, eutrophication – phosphorus, sedimentation, synthetic organic compounds, pesticides, and volatile organic compounds.

To determine the assessment area's susceptibility to contamination, a qualitative (semi-quantitative) screening level susceptibility analysis was designed that utilizes general assumptions and best professional judgement. It is a systematic procedure comprised of simple yes/no questions. Each question in the susceptibility analysis focuses on the presence or absence of potential pollution sources in the assessment area. SLS is most useful in helping the Public Water Supply (PWS) focus on water quality protection actions towards a contaminant category of concern. For example, if the SLS for microbiological contamination is high, relative to volatile organic compounds (VOC), water supply protection planners would conclude that the attention should be directed towards microbiological contaminant sources rather than VOC sources.

# Executive Summary

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**

## Susceptibility Likelihood Scores for Assessment Area

	<b>A</b>	<b>B</b>	<b>B1</b>	<b>B2</b>	<b>C</b>	<b>C*</b>	<b>D</b>
Susceptibility Likelihood Score – SLS	<b>49</b>	<b>59</b>	<b>51</b>	<b>53</b>	<b>56</b>	<b>55</b>	<b>58</b>
SLS Range	<b>Low</b>	<b>Mid</b>	<b>Low</b>	<b>Mid</b>	<b>Mid</b>	<b>Mid</b>	<b>Mid</b>

**A** – Microbiological

**B2** – Sedimentation

**C\*** – Pesticides

**B** – Inorganic Compounds

**C** – Synthetic Organic Compounds

**D** – Volatile Organic Compounds

**B1** – Eutrophication – Phosphorous

## Susceptibility Likelihood Range

SLS Range	
<b>0–50</b>	<b>Low Susceptibility</b>
<b>51–80</b>	<b>Moderate Susceptibility</b>
<b>81–100</b>	<b>High Susceptibility</b>

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## Potential Sources:

The Potential Sources section lists all the sites that have been identified as potential sources of contamination.

Potential sources of contamination may include land uses, industry, or businesses that could generate or store chemicals/substances that could potentially contaminate the water supply only if released into the environment. Both unregulated sites from business location databases and regulated sites from various KDHE databases were compiled. Additional sites could have been added by an evaluator through the assessment process to supplement the original data.

The 1987 Standard Industrial Classifications (SIC) were used to identify potential contaminate sites. The SIC system classifies establishments into industries on the basis of the primary activities of the establishment.

Each assessment area is delineated with 3 assessment zones. These zones can be used to get a general understanding of the potential influence sites have based on proximity to the water supply. Zone A is a 100-foot radius around a groundwater well and a 1000-foot radius around a surface water intake. Zone B is a 2000-foot radius around wells and a hydrological delineated buffer around the surface water sources. Zone C is a 2-mile radius around wells and the balance of the watershed for intakes. The potential sources listed in this section are sorted to show all the potential sources in Zone A first, Zone B second, and Zone C third.

**Although a facility or business is identified in the study as a potential concern, it does not necessarily mean a release or spill has occurred. Contamination could only occur if certain chemical substances are released into the environment and filter into the water supply source.**

The data for the potential sources of contamination was compiled from May through August in 2002. Some of the databases used were incomplete datasets that are continually being updated. Due to the incompleteness, inaccuracies, and new development, it is possible that sources of potential contamination that are in the assessment area are not included in the report. Inaccurate locations could also cause sources to show up in the assessment area that are not actually in the assessment. Additionally, duplication between the datasets could cause sites to show up multiple times in the assessment area.

# Potential Sources

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**

## Unregulated Potential Site Sources

Source No.	SIC Description	SIC ID	Zone
141636	Single-family Housing Construction	1521	B

## Regulated Confined Animal Feeding Operations Potential Site Sources

Source No.	Source Name	ID/Permit No.	Zone
2000292	Mickelson Farm	A-MCOS-BA09	B

## Regulated Hazardous Waste Potential Site Sources

Did Not Contain Any Of These Potential Site Sources
---

## Regulated Leaking Storage Tank Potential Site Sources

Did Not Contain Any Of These Potential Site Sources
---

## Regulated Identified Contaminated Potential Site Sources

Did Not Contain Any Of These Potential Site Sources
---

## Regulated Solid Waste Potential Site Sources

Did Not Contain Any Of These Potential Site Sources
---

## Regulated Waste Water Potential Site Sources

Source No.	Source Name	ID/Permit No.	Zone
6000767	HUNT MIDWEST – LYNDON QUARRY	I–MC21–PO03	B

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## **Added Sources:**

The Added Sources section lists all the sites that have been added as potential sources of contamination by an evaluator through the assessment process to supplement the original data.

The potential sources listed in this section are sorted to show the added potential sources in Zone A first, Zone B second, and Zone C third.

**Although a facility or business was added as a potential concern, it does not necessarily mean a release or spill has occurred. Contamination could only occur if certain chemical substances are released into the environment and filter into the water supply source.**



# Added Sources

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 760

## Added Potential Site Sources

Source No.	Source Name	SIC ID	Zone
Did Not Add Any Site Sources			

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## **Potential Contaminants Summary:**

The Contaminants Summary shows the number of identified unregulated sources in the assessment area for each contaminant of concern category.

In order to obtain the number of sources for each category, a relationship was correlated between each Standard Industrial Classification (SIC) and the contaminant of concern categories. Each SIC was assessed and associated with contaminant categories. For example, if not managed properly, a car wash (SIC 7542) could potentially contaminate an intake because of inorganic compounds (IOC) and volatile organic compounds (VOC); thus, a car wash is associated with IOCs and VOCs.

A chart displays a count for each contaminant category. The sum for each category represents the total number of identified sources that have been associated with that particular contaminant category. However, the total number of identified sources does not include contaminants from the Added Sources. In our example, a car wash would be considered 2 sources of contamination. It would be a potential source of contamination for IOCs and for VOCs; thus, 1 would be added to the total number of sources in the VOC category and 1 would be added to the IOC category.

# Potential Contaminants Summary

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 760

## Number of Unregulated Site Sources Identified for each Contaminant Category

MicroBiological	Sedimentation	Pesticides	IOC's	SOC's	VOC's	E – P
1	1	0	0	1	0	1

A – Microbiological

B2 – Sedimentation

C\* – Pesticides

B – Inorganic Compounds

C – Synthetic Organic Compounds

D – Volatile Organic Compounds

B1 – Eutrophication – Phosphorous

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## Potential Contaminants Listing:

The Potential Contaminants section lists the contaminant of concern category associated with each Standard Industrial Classification (SIC) found in an assessment area. A complete list of contaminant category codes are located at the bottom of this page.

The relationships defined between the Standard Industrial Classifications (SIC) and the contaminant of concern categories are displayed in a table format. Using our car wash example, the relationships can be better illustrated. A car wash could release IOC and VOC chemical substances. The connection is shown by indicating the SIC, 7542, and the associated contaminant categories, IOC (Category B) and VOC (Category D). However, the contaminants listed are not associated with any Added Sources.

The list is sorted by the SIC source description and it only shows unique SIC sources. For example, an assessment area can have 20 car washes in an assessment area, but the list is only going to show contaminant categories associated with car washes onetime. This is because all car washes have the same SIC and every car wash poses the same potential threat to water intakes.

<b>A</b> – Microbiological	<b>B</b> – Inorganic Compounds	<b>B1</b> – Eutrophication – Phosphorous
<b>B2</b> – Sedimentation	<b>B*</b> – Nitrates	<b>C</b> – Synthetic Organic Compounds
<b>C*</b> – Pesticides	<b>D</b> – Volatile Organic Compounds	

# Potential Contaminants Listing

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 760

## Unregulated Identified Site Sources and associated Potential Contaminant Category

SIC ID	SIC Source	Potential Contaminant	Contaminant Category
1521	Single-family Housing Construction	Oil, Paint, Pesticides, Fertilizers	A
"	"	"	B1
"	"	"	B2
"	"	"	B*
"	"	"	C

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## **Protection Measures:**

The Protection Measures section shows water quality protection measures for the Standard Industrial Classifications (SIC) identified in the assessment area.

Previous sections of this report are designed to show areas that Public Water Supplies (PWS) can focus on to improve the susceptibility of an assessment area. This section helps identify water quality protection measures that a PWS can use as guidance for implementing action for a potential contaminant site in the assessment area. It focuses on protection measures that can reduce the risk of contamination to the water supply.

This portion of the report only displays water quality protection measures for each type of SIC found in the assessment area. It does not display protection measures for each site in the assessment area because every SIC should have the same or similar water quality protection management practices. However, the protection measures listed are not associated with any Added Sources.

# Protection Measures

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**

## Recommended Water Quality Protection Measures

SIC	SIC Source	Contaminant Source	Water Quality Protection Measure	Regulatory Authority
1521	Single-family Housing Construction	Oil, Paint, Pesticides, Fertilizers	Proper cleaning and disposal of household hazardous waste. Proper storage, application, and clean up of pesticides and fertilizers	KAR 28–48, KDHE, KDEM

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## **Assessment Analysis:**

The Assessment Analysis section displays the numbers assigned to each contaminant of concern category for each question in the susceptibility analysis.

This analysis is based on a decision tree framework consisting of a series of yes/no questions. These questions consider the proximity of contaminant sources to the water supply intake, the type of contaminant, and the application of pollution prevention or water quality protection practices to sources of contamination. As the evaluator moves through the analytical framework, susceptibility points are accumulated based on the presence of contaminant sources in the assessment area.

After all the questions have been answered, the SLS is calculated for each contaminant of concern category. The SLS is determined by counting the number of contamination risk factors found to occur in the delineated assessment area and applying a multiplier to this number. Because the number of contaminant category risk factors is not equal, the multiplier is used to establish a common scale for the SLS of each contaminant category.



# Assessment Analysis

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**

## Surface Water Single Well Analysis

**A** – Microbiological    **B** – Inorganic Compounds

**B1** – Eutrophication – Phosphorous

**B2** – Sedimentation    **C** – Synthetic Organic Compounds

**C\*** – Pesticides        **D** – Volatile Organic Compounds

No.	Question	Response	A	B	B1	B2	C	C*	D
1	Is the intake located at a treatment plant?	No	1	1	0	0	1	1	1
2	Is there an open channel conveyance from the intake to the treatment plant?	Yes	1	1	0	0	1	1	1
3	Does a PWS own or control the conveyance right-of-way?	No	1	1	0	0	1	1	1
4	Does a PWS own or control the area within 1/4 mile of intake?	No	1	1	0	0	1	1	1
5	Is the area within 1/4 mile of the intake entirely native grass?	No	1	1	0	0	1	1	1
6	Is transportation infrastructure in close proximity to the intake?	Yes	0	1	0	0	1	1	1
7	Are there water quality protection plans for the transportation infrastructure?	No	0	1	0	0	1	1	1
8	Are any commercial, industrial, or urban areas present?	No	0	0	0	0	0	0	0
9	Does each industrial/commercial site and urban area have a water quality protection plan in place?	Yes	0	0	0	0	0	0	0
10	Is riparian area vegetated?	No	1	1	0	0	0	1	0
11	Has riparian area been farmed up to the stream/riverbank?	Yes	0	0	0	0	0	1	0
12	Is there a lack of native grass or trees?	Yes	0	0	0	0	0	0	0
13	Is livestock use present in riparian area?	No	0	0	0	0	0	0	0
14	Are any confined livestock production sites in riparian area?	No	0	0	0	0	0	0	0
15	Is each confinement area registered with KDHE?	Yes	0	0	0	0	0	0	0
16	Are any row crops (corn, milo, soybean) present?	Yes	0	0	0	0	0	1	0
17	Are water quality protection plans in use for each cropland?	No	0	0	0	0	0	1	1

No.	Question	Response	A	B	B1	B2	C	C*	D
18	Are any orchards present?	No	0	0	0	0	0	0	0
19	Are water quality protection plans in use for each orchard?	Yes	0	0	0	0	0	0	0
20	Is the intake a river intake?	Yes	1	1	0	1	1	1	1
21	Is the intake at a city-owned lake?	No	1	1	1	1	1	1	1
22	Is there water quality monitoring conducted at the river or lake?	Yes	0	0	0	0	0	0	0
23	Is TMDL needed for any of the rivers or lakes?	Yes	1	1	1	1	1	1	1
24	Are TMDL pollutants of concern reported by monitoring?	Yes	0	0	0	0	0	0	0
25	Are any point source discharges within 16 miles upstream of intake?	No	0	0	0	0	0	0	0
26	Is pretreatment required at any of the point sources?	No	0	0	0	0	0	0	0
27	Are all riparian buffers vegetated?	Yes	0	0	0	0	0	0	0
28	Are vegetated riparian buffer and a water quality protection plans in place?	No	1	1	1	1	0	1	0
29	Is there urbanized land within riparian buffer?	No	0	0	0	0	0	0	0
30	Is a NPDES stormwater permit required for the urbanized areas?	No	1	1	1	1	1	1	1
31	Are voluntary water quality protection plans in place for each urbanized area?	Yes	0	0	0	0	0	0	0
32	Is there industrial land use within riparian buffer?	No	0	0	0	0	0	0	0
33	Is NPDES stormwater permit required for industrial areas?	No	1	1	1	1	1	1	1
34	Are voluntary water quality protection plans in place for each industrial area?	Yes	0	0	0	0	0	0	0
35	Are there livestock present?	Yes	1	0	1	0	0	1	0
36	Is there livestock confinement present?	No	0	0	0	0	0	0	0
37	Is each confined livestock facility registered with KDHE?	Yes	0	0	0	0	0	0	0
38	Are any row crops (corn, milo, soybeans) present?	Yes	0	0	1	1	0	1	0
39	Are water quality protection plans in use for each row crop production?	No	0	0	1	1	0	1	0
40	Are any orchards present?	No	0	0	0	0	0	0	0
41	Are water quality protection plans in use for each orchard?	Yes	0	0	0	0	0	0	0
42	Is there any small grain (wheat, oats, barley) production?	Yes	0	0	1	1	0	1	0
43	Are water quality protection plans in use for each small grain production?	No	0	0	1	1	0	1	0
44	Are there unsewered developments (concentrations of lagoons or septic systems) present in Zone B?	Yes	1	1	0	0	0	0	0
45	Is a general watershed water quality protection plan in use?	No	1	1	1	1	1	1	1
46	Are any point source discharges within 16 miles upstream of intake?	No	1	1	1	0	1	0	1
47	Is pretreatment required at any of the point sources?	No	0	0	0	0	0	0	0

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## **Site Comments:**

The Site Comments section lists all the comments that were added for the potential sources of contamination found in the assessment area.

Local comments and feedback from people that are familiar with the assessment area is an important aspect of the assessment. The comments greatly improve the assessment by adding detail to the sites that can be referenced for more information.

This local information may include comments on potential contamination threats (or lack there of), local water quality protection initiatives, etc. Adding comments are optional and are mainly focused on sources in areas that could have the greatest impact on water supply if a spill or release occurred in the environment. It is left to the discretion of the PWS and/or source water assessment committee to add comments.

# Site Comments

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**

## Comments for Unregulated Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Confined Animal Feeding Operations Sites

Potential Contaminant Site Name	Site No.	Site Comments	Author
Mickelson Farm	2000292	this livestock facility has no water quality protection plans	Sheila Dale

## Comments for Regulated Hazardous Waste Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Leaking Storage Tank Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Identified Contaminated Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Solid Waste Sites

Did Not Receive Any Comments
------------------------------

## Comments for Regulated Waste Water Sites

Potential Contaminant Site Name	Site No.	Site Comments	Author
HUNT MIDWEST – LYNDON QUARRY	6000767	This quarry is under special use permit and with the state and has water plans	Sheila Dale

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

### **Added Site Comments:**

The Added Site Comments section lists the comments for why sites were added as a potential source of contamination found to the assessment area.

# Added Site Comments

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**

## Comments for Added Contaminant Sites

Added Contaminant Site Name	Site No.	Site Comments	Author
Did Not Receive Any Comments			

Public Water Supply: **MELVERN, CITY OF**  
Assessment Area: **760**  
Diversion Id's: **999**  
Status: **Accepted**  
Submit Date: **2003-06-17 09:50:37**

## **Analysis Question Comments:**

The Analysis Question Comments section lists all the comments that were added during analysis portion of the assessment, in which a series of yes/no questions were asked.

Evaluators have the option to add comments to questions to clarify why a response was given or to give more details to a question. Local comments and feedback from people that are familiar with the assessment area is an important aspect of the assessment. The comments greatly improve the assessment by adding clarification and details that could not be identified with a simple yes or no response.



# Analysis Question Comments

Public Water Supply: MELVERN, CITY OF  
Assessment Area: 760

## Comments for Analysis Questions

Analysis Question	Question Comments	Author
Did Not Receive Any Comments		